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HEALTH PROTECTION; THE TARGET OF THE BUREAU OF DISEASE PREVENTION AND ENVIRONMENTAL CONTROL

Public Health Service
Washington, D.C.

1967

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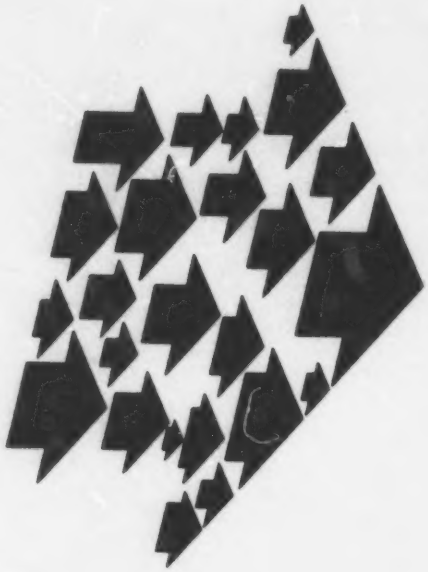

Health Protection; the target of the Bureau of Disease Prevention and Environmental Control

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U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Public Health Service

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AT THE DIRECTION of the President, and under the leadership of the Surgeon General, the Public Health Service has been reorganized, given a fresh mandate and instilled with increased determination to protect the Nation's health.

Our newly created Bureau of Disease Prevention and Environmental Control is designed to provide leadership in the control and prevention of disease and environmental hazards. The five national centers which are this Bureau's operating agencies will stress efficient, effective, and realistic action to meet the health challenges of today and the future.

I hope that the resource material presented in this publication will forward understanding of the Bureau's mission, structure, and function and also show how the action programs of the national centers are geared to the health protection needs of our Nation.

RICHARD A. PRINDLE, M.D., M.P.H.
Assistant Surgeon General
Director, Bureau of Disease Prevention
and Environmental Control

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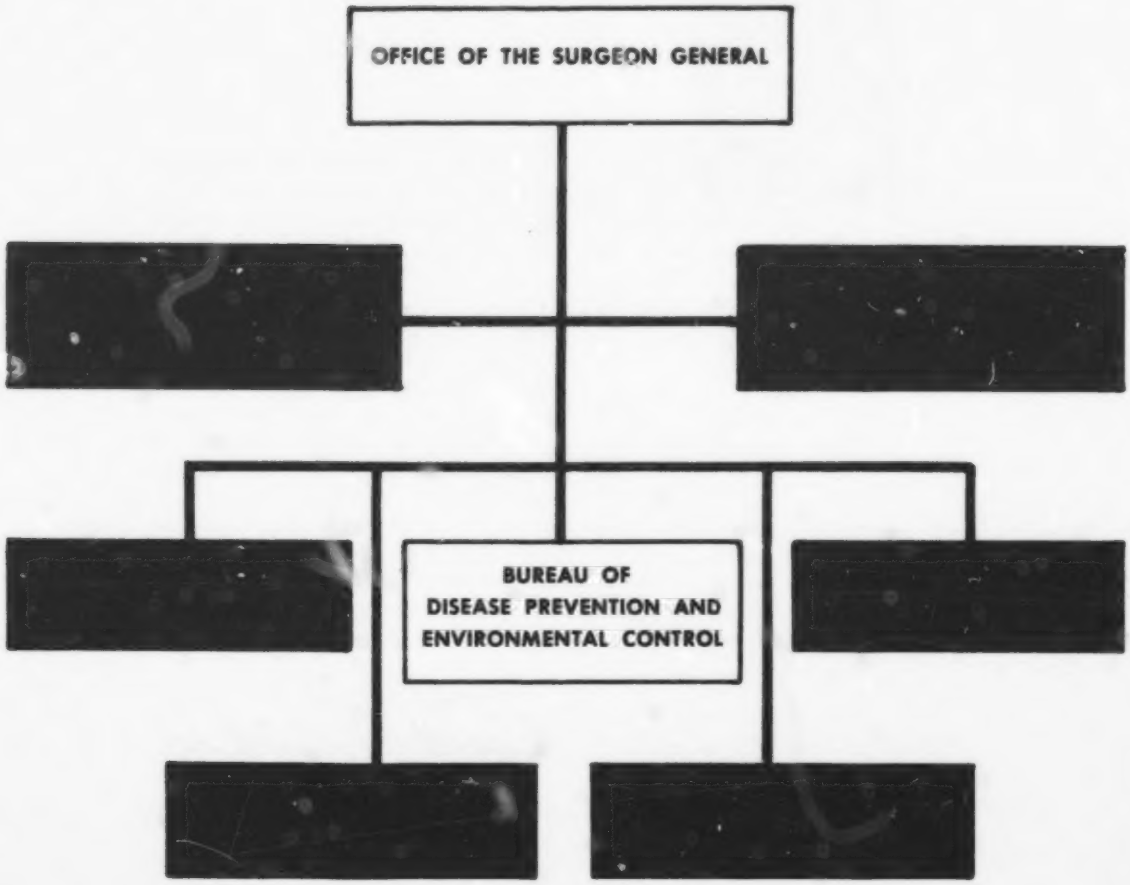

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BUREAU OF DISEASE PREVENTION AND ENVIRONMENTAL CONTROL

OFFICE OF DIRECTOR
OFFICE OF COMPLIANCE AND CONTROL
OFFICE OF ADMINISTRATIVE MANAGEMENT
OFFICE OF PROGRAM PLANNING & EVALUATION
OFFICE OF RESEARCH AND DEVELOPMENT
OFFICE OF STANDARDS AND INTELLIGENCE
OFFICE OF INFORMATION
NATIONAL CENTER FOR AIR POLLUTION CONTROL
NATIONAL CENTER FOR CHRONIC DISEASE CONTROL
NATIONAL COMMUNICABLE DISEASE CENTER
NATIONAL CENTER FOR RADIOLOGICAL HEALTH
NATIONAL CENTER FOR URBAN & INDUSTRIAL HEALTH

Bureau of Disease Prevention and Environmental Control

ITS MISSION / ITS STRUCTURE / THE PROBLEMS IT FACES

On April 25, 1966 President Lyndon B. Johnson transmitted to Congress his Reorganization Plan No. 3 of 1966, initiating a far-reaching reorganization and redirection of the Public Health Service. The purpose of the reorganization was to enable the Public Health Service to serve with greater efficiency a proposition which in recent years has achieved almost universal acceptance within the United States—that health is a human right.

In striving to clothe this proposition with reality, at least two requirements are self-evident:

> The first is to remove the inequities and inadequacies which bar many millions of people from access to high quality personal health services.
>
> The second is to assure to the American people maximum protection against preventable disease and hazards in the environment.

As a result of the reorganization scores of specific activities, programs and responsibilities of the Public Health Service were regrouped into five Bureaus, each of which administers and provides leadership for a number of related activities. The new structure of the Service is depicted in the chart on page iv.

The functions of the Bureaus are to aid in the discovery of new basic scientific knowledge about man's health and illnesses, and about the health hazards in his environment; to provide national leadership in applying both old and new knowledge in the prevention, diagnosis, and treatment of illnesses and impairments to human health; and to help the Nation acquire the trained manpower and physical facilities needed for better national health.

The aim of this publication is to provide essential details on the mission of the Bureau of Disease Prevention and Environmental Control, and to describe the organization and the methods employed in attainment of that mission. The principal health problems and environmental hazards that are the concern of the Bureau also will be described.

Mission

The official formation of the Bureau on January 1, 1967, brought together under one administrative roof nearly a score of Public Health Service programs having a common objective: To prevent or ameliorate threats to the health of the public and to promote the quality of the environment and the living process. More specifically, the programs encompassed within the Bureau are those whose purpose is:

> . . . to eliminate or reduce environmental hazards
>
> . . . to reduce the incidence of accidental injury and death
>
> . . . to prevent or reduce the incidence of communicable disease
>
> . . . to prevent the occurrence or reduce the effects of chronic diseases.

Action programs directed at these purposes are the responsibility of the national centers which comprise the Bureau (see chart on page vi):

> National Center for Air Pollution Control
> National Center for Chronic Disease Control
> National Communicable Disease Center
> National Center for Radiological Health
> National Center for Urban and Industrial Health

In the studies which led to the final choice of an organization pattern for the new Bureau the example of the preexisting PHS Communicable Disease Center (CDC) in Atlanta was of great influence. CDC has earned international recognition for its ability to take effective sustained action. Virtually self-contained with respect to program administration and thus able to move swiftly when necessary, CDC was nevertheless responsive to the needs and directives of higher echelons and sensitive to the responsibilities and policies of other organizations working in its field. Of particular significance to the other

operating programs of the Bureau was the remarkably effective working relationships CDC had been able to develop with the State and local health departments, with medical and related professional organizations, and with individual practitioners.

Working in advisory or coordinating capacities with other parts of the Public Health Service and of the Department, and with other Federal agencies, the Bureau will keep health protection considerations sharply in focus at the Federal level.

The five national centers are the Bureau's action agencies. They strengthen, work with, and give leadership where needed to the efforts of "front-line" organizations in their battle against ill health and a deteriorating environment—organizations whose primary mission is to serve the health interests of groups of people rather than of individuals.

The organizations include State and local health departments, national and local voluntary health agencies, official agricultural, food, traffic and safety organizations, air and water resource agencies, industries and labor unions, foundations, and many others.

The number of people coming within the purview of such organizations may range from a few hundred to many millions; the geographic area of concern can vary from a small neighborhood to the entire world; with respect to the environmental and disease problems or hazards their interests may range from decibels of noise to picocuries of strontium 90, or from smallpox to cancer.

The centers stimulate and strengthen action by these organizations using established preventive and control measures.

Of perhaps greater importance, the centers attempt in every feasible way to speed up the widespread application to public health practice of new knowledge from the Nation's research institutions. For this purpose they conduct or support numerous developmental and feasibility studies, pilot projects, and field demonstrations.

Another function of great importance shared by all the centers is to help provide the especially trained professional and technical workers required to diagnose, prevent, and control health hazards. In close cooperation with the Service's Bureau of Manpower, numerous professional societies, universities, State and local health departments, and other interested organizations, each center devotes a sizeable proportion of its funds to training activities.

In certain programs, the centers share the administration of the various projects, demonstrations and other activities, through grant arrangements with the regional offices of the Public Health Service. This technique, which concerns mostly the National Communicable Disease Center and the National Center for Chronic Disease Control, permits some degree of flexibility for mobilizing resources and meeting health problems as various situations and opportunities arise.

Bureau Headquarters

The responsibilities of the Director of the Bureau are many and varied. He and his staff must analyze existing or emerging health protection problems to determine whether action being undertaken by one or more of the national centers is adequate. When new or changed effort is required, the Director must provide leadership and coordination. Similarly, long-range trends must be identified, evaluated, and fitted into the advance planning of the centers.

Health protection and control of the environment cannot be divided into self-contained spheres of responsibility and action. Virtually every activity of a national center affects or is affected by the programs and problems of other centers, other programs of the Public Health Service, and other interests not only of the Federal Government but also of a multitude of non-Federal organizations. Thus, a major responsibility of the Bureau Director is to maintain good communications and working relationships with a large number of other organizations.

To discharge these and other responsibilities the Bureau Director relies on strong staff support in such areas as administrative management, program planning and evaluation, standards and intelligence, compliance and control, research and development, and public and professional communications.

The Office of Administrative Management provides the staff support for coordinating, directing, and assessing the Bureau's management activities. This office provides management advice on program decisions and Bureau-level services such as personnel, financial, and supply management, including contract negotiations and administration, and grants management. Aids such as the Program Planning

Budgeting System (PPB) and the Planning-Decision System have been developed by the office to permit efficient flow and use of management information.

General program planning advice for the Bureau, including evaluating the effectiveness of current programs and determining the need for new programs, is conducted by the Office of Program Planning and Evaluation. This office also develops legislative proposals needed to authorize program activities and is the legislative and legal liaison with the Office of the Surgeon General and other agencies.

An Office of Standards and Intelligence is concerned with developing and assessing the criteria and standards used in the Bureau's programs and with the methods employed by the programs in obtaining various data. The Bureau's compliance and enforcement activities, carried out with Federal, State, local and international agencies and nongovernmental groups, are coordinated by the Office of Compliance and Control. Coordination of the various intramural and extramural research activities conducted by the Bureau's programs is performed by the Office of Research and Development. The Office of Information is responsible for interpreting the Bureau's mission to the public.

In the nine regional offices of the Department of Health, Education, and Welfare each national center is represented by one or more of its senior members having broad knowledge of the center's programs and priorities. These representatives serve as the primary liaison between their centers and agencies of State and local governments, with emphasis on assisting them to plan for and achieve comprehensive personal and environmental protective health services in every State and community.

A significant feature of the Bureau is its long-term decentralization plan. The objectives of this plan are to place the various center resources:

(a) close to the sources of problems which need to be studied

(b) close to "centers of excellence"—universities and other research and development resources concerned with problems related to the health protection mission.

Because they emerged from preexisting organizations which had their headquarters outside the Washington, D.C. area, two of the national centers

Bureau of Disease Prevention and Environmental Control Headquarters, Washington, D.C.

began their new existence in conformance with this plan. These are the National Communicable Disease Center in Atlanta, Ga., and the National Center for Urban and Industrial Health, in Cincinnati, Ohio. The National Center for Urban and Industrial Health evolved basically from the activities of the former Robert A. Taft Sanitary Engineering Center which had its headquarters in Cincinnati.

As their programs mature and evolve, similar geographic decentralization for the other centers will receive careful study. The possibility also exists that with experience, growth, and the emergence of new problems or priorities, additional national centers may need to be created. The authority to respond creatively to changing national health needs was given to the Secretary of Health, Education, and Welfare under Reorganization Plan No. 3—the same authority which led to the formation of the Bureau of Disease Prevention and Environmental Control.

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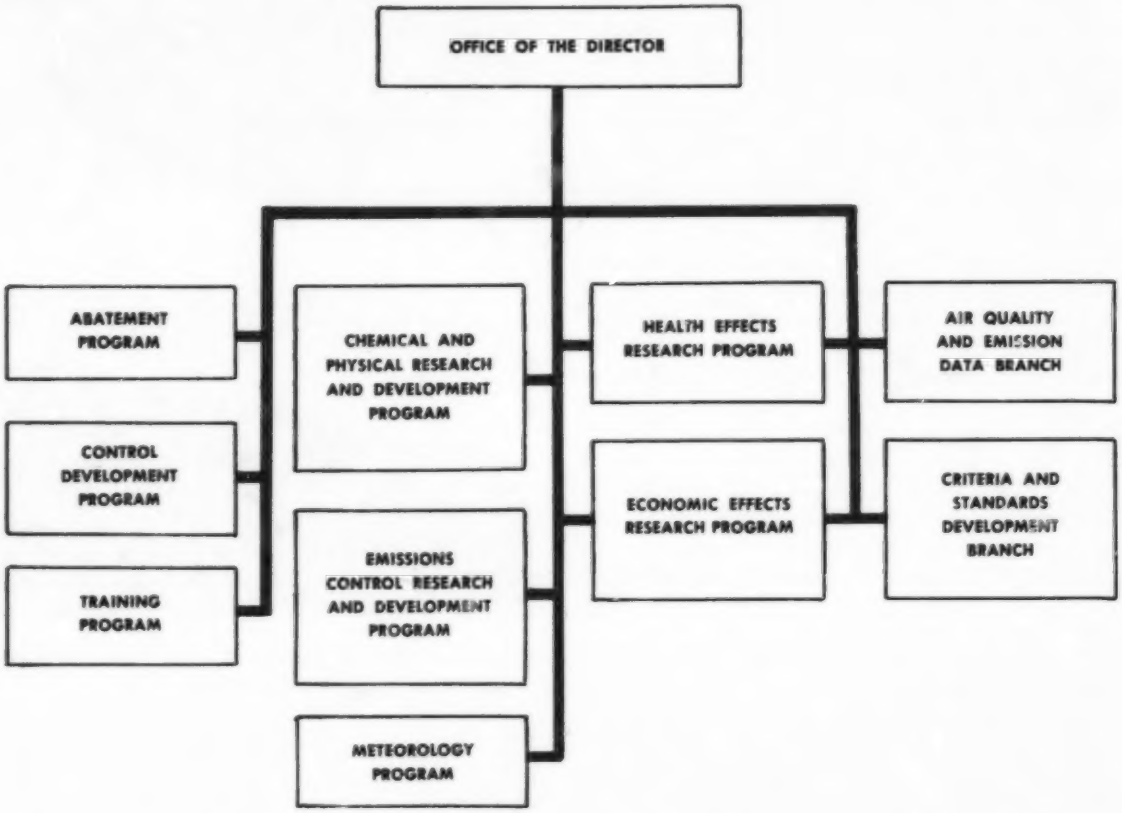
NATIONAL CENTER FOR AIR POLLUTION CONTROL

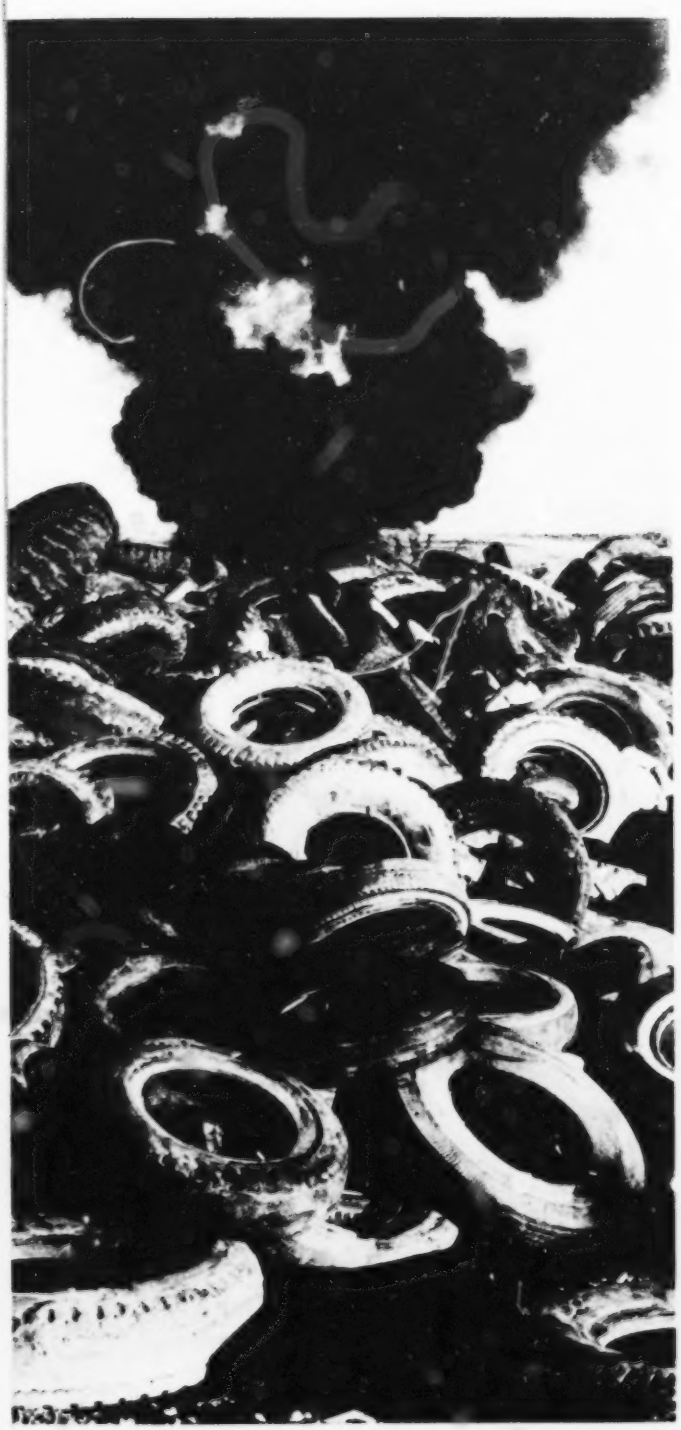

OFFICE OF THE DIRECTOR
ABATEMENT PROGRAM
CONTROL DEVELOPMENT PROGRAM
TRAINING PROGRAM
CHEMICAL AND PHYSICAL RESEARCH AND DEVELOPMENT PROGRAM
EMISSIONS CONTROL RESEARCH AND DEVELOPMENT PROGRAM
METEOROLOGY PROGRAM
HEALTH EFFECTS RESEARCH PROGRAM
ECONOMIC EFFECTS RESEARCH PROGRAM
AIR QUALITY AND EMISSION DATA BRANCH
CRITERIA AND STANDARDS DEVELOPMENT BRANCH

National Center for Air Pollution Control

On Thanksgiving Day, 1966 the Nation watched a grim demonstration in New York City of how serious the problem of air pollution has become. A stagnant air mass settled over the city, and pollution from sources in two, perhaps three States, collected rapidly. City officials were forced to warn persons with respiratory ailments to stay out of the choking air in the streets. In spite of precautions, the polluted air may have contributed to the death of an estimated 80 persons, and hundreds more became ill until rain washed the air clean a few days later.

The New York incident is a reminder that air pollution is growing at a rate which outstrips our efforts at control. The effects of air pollution are not always demonstrated so dramatically, but they are present nearly everywhere. Most important and threatening are the effects on human health. Emphysema is a rapidly growing cause of death in this country. Studies have demonstrated that emphysema patients improve when they are protected from air pollution. The fact that the incidence of emphysema is greater in our cities than in our rural areas points to air pollution as a contributing factor, as does the fact that deaths from emphysema are twice as high in the city as in the country. In Great Britain, where chronic bronchitis has received a great deal of attention and where extensive data on it have been collected, cigarette smoking and air pollution are accepted as distinct causes of the disease. Bronchial asthma is also a condition often aggravated by air pollution. Although it is difficult to define precisely the role of air pollutants, it has long been known that occupational exposure to certain dusts and vapors, including many that are found in substantial quantities in the air over our cities, can bring about asthmatic attacks. Deaths from lung cancer have been increasing rapidly in recent years, and while many factors are probably involved, the striking difference between urban and rural mortality rate for lung cancer patients points to one of them—air pollution. The rate in our large metropolitan areas is twice the rural rate, even after full allowance is made for difference in smoking habits. The death rate from lung cancer is apparently directly proportional to city size, and the same can be said, in general, for air pollution.

The damage to plants and animals that air pollution causes is estimated to cost the Nation half



Burning city dump

a billion dollars a year. Air pollution also accelerates the deterioration of materials, structures, and machines of all kinds. Metals corrode, fabrics weaken and fade, leather weakens and becomes brittle, rubber cracks, paint discolors, concrete and stone erode, glass is etched, and paper becomes brittle.

Estimates of economic losses due to air pollution are often overly conservative. Rarely are the costs identified for using expensive materials that are resistant to pollutants. Gold and other precious metals, for example, are widely used for electrical contacts because of their low chemical reactivity. The present cost of gold used annually in the United States for electrical contacts is approximately $15 million. If silver could replace gold, the saving would be $14.8 million, based on equivalent volumes of metal.

The cost of replacing or protecting precision instruments and other equipment affected by pollutants is great and growing. The complex and expensive control systems which are becoming so commonplace in modern technology can be ruined or seriously damaged by the corrosive action of gaseous pollutants or by deposited dust.

While exact data are not available on the full extent and total cost of air pollution's damage to property, the cost most frequently used is $65 per capita per year—an annual cost to the Nation of over $12 billion.

The National Center for Air Pollution Control conducts a broad program of research, training, technical assistance, State and local agency support, and abatement activities to protect the American citizen from the harmful effects of air pollution. The center's activities are aimed specifically at increasing our knowledge of the nature, sources, effects, and control of air pollution and at achieving the maximum application of this knowledge.

The research that the national center is engaged in is broad and basic. Periodic measurements of the pollutants in the air are taken at more than 200 urban sites, and round-the-clock automatic measurements of the most significant gaseous pollutants are made in six major cities—Chicago, Philadelphia, Denver, St. Louis, Cincinnati, and Washington,

D.C. Investigations of the role that meteorology plays in air pollution are developing the techniques with which both the ominous stagnation periods and the everyday levels of pollution can be accurately predicted. Methods limiting the emission of sulfur from stacks are being developed, as are methods of controlling diesel emissions. Investigation of the effects of pollution on humans, plants, animals, and materials is continuing. Besides the research carried on by the national center itself, further research by universities and other institutions is being supported by grants.

The national center provides technical assistance to State and local air pollution control agencies. This assistance may range from short-term consultation on specific problems to extensive guidance and help in planning and conducting comprehensive community air pollution surveys. In all cases the objective is the same—to promote a more effective attack on air pollution by helping States and communities assess their air pollution problems and plan appropriate control programs. Technical assistance activities also include compiling and publishing information on air pollution problems associated with specific industries and on available ways of dealing with those problems.

Under the Clean Air Act of 1963, as amended, the Federal Government gives financial aid in the form of grants to State and local governments to assist them in establishing, developing, improving, and maintaining air pollution control programs. These grants have already resulted in a significant expansion of State and local control activity. They have stimulated an increase of about 65 percent in the annual State and local budgets for air pollution control.

Grants are also made to State and local agencies to help them survey their needs and develop air pollution control programs when they have neither the technical data nor the legal authority needed to control pollution. Demonstration grants are awarded to State and local agencies to assist them in evaluating the technical and economic feasibility of methods of preventing and controlling air pollution or demonstrating the applicability of specific control techniques.

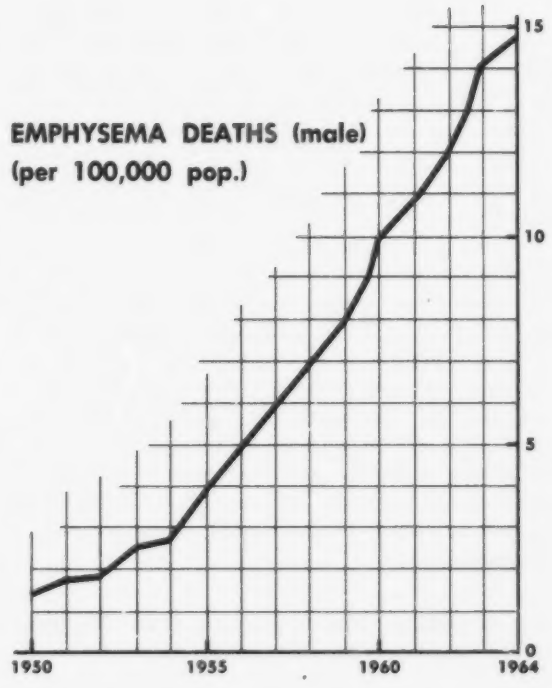
Station operator examining data from an instrument of the continuous Air Monitoring Network

An apartment house boiler plant chimney contributes to air pollution

Funds and equipment for an air pollution control program are of little value without skilled personnel to plan and operate the program. The national center assists State and local agencies with their manpower problems in three ways: by sponsoring graduate-level training programs, by awarding fellowships to individual trainees, and by conducting short-term training courses for persons already working in the air pollution field.

Under the 1965 Amendments to the Clean Air Act, the Secretary of Health, Education, and Welfare has issued motor vehicle emission standards which apply to new automobiles beginning with the 1968 models. These standards are upper limits on the amounts of hydrocarbons and carbon monoxide that a car may discharge to the atmosphere.

While the control of stationary sources of air pollution is primarily the responsibility of State and local agencies, the Federal Government can and does take action in cases where pollution from sources in one State affects people living in another. At the beginning of 1967 interstate abatement actions were being pursued by the Federal Government in nine regions of the country, and surveillance activities were being carried out in many more.



Motor vehicles crowd into cities, pouring exhaust fumes into the atmosphere.

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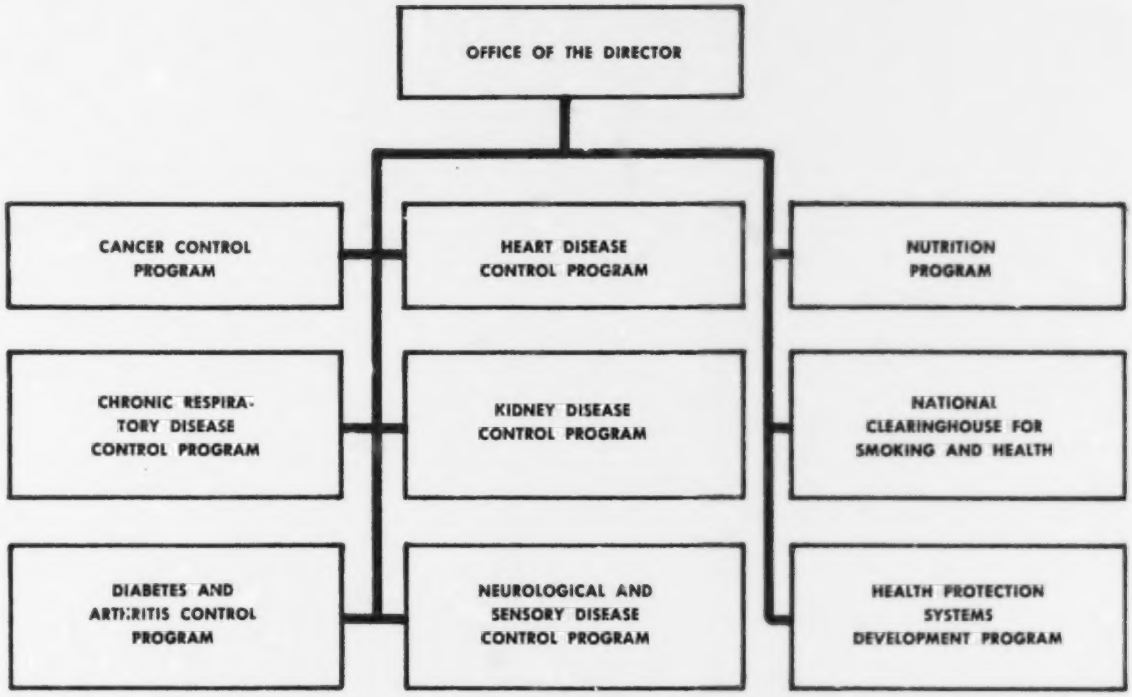
NATIONAL CENTER FOR CHRONIC DISEASE CONTROL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KIDNEY DISEASE CONTROL PROGRAM
NATIONAL CLEARINGHOUSE FOR SMOKING AND HEALTH
DIABETES AND ARTHRITIS CONTROL PROGRAM
NEUROLOGICAL AND SENSORY DISEASE CONTROL PROGRAM
HEALTH PROTECTION SYSTEMS DEVELOPMENT PROGRAM

National Center for Chronic Disease Control

About 74 million Americans suffer from one or more chronic illnesses. Two out of every three deaths in this country are caused by heart and circulatory disorders or cancer. The cardiovascular diseases, alone, claim about a million lives a year, cancer kills 300,000 persons, and kidney disease kills another 100,000 citizens.

Allied with these killer diseases are scores of other crippling disabilities. More than 16 million Americans are affected by blindness, deafness, and other neurological and sensory diseases; 13 million have some form of arthritis or rheumatism; 2 million are known diabetics, and an equal number have the disease but remain undetected and untreated.

The National Center for Chronic Disease Control, working with States and communities, conducts and coordinates a national program for preventing and controlling the principal chronic diseases in this country. In general, the center seeks to expedite the conversion of new medical knowledge into health protection programs. Through grants, contracts, and demonstration projects, the center develops and conducts surveillance activities and conducts research on the epidemiology of chronic diseases and on methods of prevention, diagnosis, treatment, and medical rehabilitation. It provides technical assistance and cooperates with governmental and other organizations in the development, operation, and improvement of their programs for preventing and controlling chronic diseases, and it assists States in developing comprehensive health plans. The center also conducts public information and educational activities and advises and consults with international organizations and foreign governments in developing disease prevention and control activities.

The center conducts nine major disease control programs: cancer control, the National Clearinghouse for Smoking and Health, heart disease control, chronic respiratory disease control, diabetes and arthritis control, kidney disease control, neurological and sensory disease control, a nutrition program, and health protection systems development.

The center's cancer control program is aimed at early detection as a major tool for preventing the disease from reaching a stage where it cannot be treated successfully. About 580,000 new cases of cancer are diagnosed each year. While one cancer victim in three is being saved today, the knowledge and skill now available should enable the Nation to save one in two.

Cancer of the uterine cervix now kills about 14,000 women a year. Early detection has reduced the mortality rate from 11 per 100,000 in 1950 to 8 per 100,000 in 1965. With more intensive application of existing capabilities for early detection and treatment of this disease, mortality could be virtually eliminated. Through grants to hospitals and other institutions, the center has launched a program that expects, by 1973, to administer the Papanicolaou smear test, a uterine cancer detection test, to the more than 8 million women over age 25 who are admitted to hospitals each year. The center is also conducting a program to increase the office use of the "Pap" smear test by personal physicians.

The leading cause of death in women from cancer is breast cancer, which affects 1 woman in every 20. Unfortunately, there is no simple method for detecting breast cancers at a very early stage. A relatively new technique of mammography has provided a useful adjunctive tool for early diagnosis, but the method, involving soft tissue X-ray techniques, requires specially trained radiologists to employ it. The center is currently supporting the training of radiologists in mammography in 10 centers throughout the country. By 1972 the center hopes to have trained 2,000 radiologists—one-third of all in the United States—in this technique. Studies are also underway, through grants and other cooperative ventures, to develop new diagnostic techniques that may help find early breast cancer.

The center's cancer control program is attempting to develop or improve early detection techniques for several other types of cancer, including cancer of the head and neck, cancer of the colon-rectum, and cancer of the lung. Accompanying these efforts are programs to put successful new techniques into widespread use as rapidly as possible.

The center's training and education activities in cancer control include programs designed to reach a broad range of professional and technological per-

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sonnel involved in cancer services. More than one-third of cancer control project grants are directed toward training activities. There are programs for: (1) technologists—training for cytotechnology, medical technology, and radiotherapy; (2) physicians, dentists, and others for advanced training in procedures such as mammography and operations of hospital tumor registries; and (3) continuing education in cancer through the hospital training program and aid to educational programs of medical societies.

Cardiovascular diseases are by far the leading cause of death in this country. More than 3 million people have coronary heart disease; 18½ million have hypertension or hypertensive heart disease; 1½ million have been affected by congestive heart failure; 1½ million have rheumatic heart disease and one-half million have congenital heart disorders. In addition, each year some 500,000 Americans are the victims of a major stroke. The annual economic burden imposed by the cardiovascular diseases amounts to an estimated $25½ billion in direct and indirect costs.

To reduce this tremendous toll, new knowledge obtained from basic research must be converted into effective public health methods for reducing cardiovascular disease incidence, morbidity, disability, and mortality. The development of such methods is the principal goal of the center's heart disease control program. It conducts and supports applied research and development activities and evaluates or demonstrates the effectiveness of prevention and control measures. The program also assesses the national need for related services and manpower and establishes standards, guidelines, and criteria needed to maintain the highest possible level of national cardiovascular health. In addition, the program provides consultation to other governmental agencies, professional and voluntary organizations, industry, universities, and other organizations concerned with cardiovascular disease control.

Projects of particular interest to the program include population and community studies which can be applied to programs for preventing and controlling heart disease and stroke; automating analysis of electrocardiograms and other physiological signals; developing and improving laboratory procedures; and developing specialized hospital intensive care units for heart attack victims.

To cope with emphysema and chronic bronchitis, the fastest rising causes of death and disability in the United States, the center is conducting a new program in chronic respiratory disease control. Within the last decade, the number of deaths caused by emphysema and chronic bronchitis have quadrupled. Chronic chest disease is the second leading cause of social-security-compensated disability and causes more invalidism than stroke, cancer, tuberculosis, or mental disorders.

The chronic respiratory disease control program complements and reinforces basic research into the causes and nature of chronic respiratory diseases with a simultaneous effort in the area of disease control. Although exact causes have not yet been pinpointed, much information on the management of chronic bronchitis and emphysema is available. By stimulating and supporting studies to determine the natural history of the diseases, to develop and refine instrumentation for the diagnosis and treatment of patients, to evaluate existing therapeutic regimens, and to work out new methodologies for care, the program aims to improve the knowledge in prevention and control of chronic respiratory diseases. As information becomes available, the program is charged with disseminating it to the medical and health professions and with promoting the application of prevention and control methods in health programs throughout the country.

Detection and diagnosis, secondary prevention, treatment, rehabilitation, and intensive care for respiratory failure are included within the program's area of interest. In addition to professional education and training, the program attempts to keep the general public informed of the latest knowledge in emphysema and related chronic chest diseases.

The center's diabetes control activities are aimed at early detection, institution of proper treatment, and instruction in self-care, which will alleviate symptoms, reduce complications, and increase the life expectancy of the diabetic. Diabetes is the primary cause of more than 32,000 deaths a year, and, in 1955, was cited as a contributory cause of 62,000 deaths. About 2.3 million persons in this country are known to have diabetes, and an estimated 1.6 million other persons have diabetes but are unaware of it. Every year, more than 300,000 persons are diagnosed as diabetic.

Technician gives pulmonary function test for emphysema

Through field studies at its research facilties in Boston and other epidemiologic and demonstration studies in communities throughout the country, the center's diabetes and arthritis control program is attempting to improve and standardize screening procedures, to map the natural history of diabetes, to seek ways to delay its onset, and to define the predisease state. Because diabetes is a self-care disease, new methods for educating the physician, patient, and general public are being studied. Other studies are to determine the cultural, environmental, and hereditary factors of the disease. The center provides .formation, financial support, and technical guidance and advice to States and communities interested in diabetes control programs.

Arthritis affects 13 million Americans and costs the U.S. economy about $3.6 billion annually. The Diabetes and arthritis control program is aimed at preventing and reducing crippling from arthritis through applied research, epidemiological investigation, the training of health professionals, and the education of the public. Application of currently available knowledge and techniques can significantly lengthen the productive life of the arthritic. Investigations of new therapeutic approaches and new ways of using accepted therapeutic methods promise better results in the future. These studies, combined with new knowledge of the epidemiology of rheumatic diseases, frequently shed light on fundamental pathologic processes, and, in turn, stimulate basic investigation. Continuous examination of the program's extramural and field research activities provides data relating to specific projects and clues to improved methodology in conducting investigations. The fundamental premise of arthritis-related activity in the diabetes and arthritis control

program is evaluation by measurable accomplishment, rather than by extent of activity.

An estimated 100,000 Americans die from kidney disease each year. Many of these deaths could have been averted if known techniques had been sufficiently developed and widely applied. The kidney disease control program, one of the newest programs in the center, seeks to prevent this needless loss of life and to promote long-range programs to develop effective methods of prevention, early detection, and treatment of kidney diseases. A major achievement in this field has been the development of artificial kidney systems, which provide practical methods for keeping alive victims of permanent kidney failure.

The program is working to establish facilities throughout the country where this lifesaving treatment can be provided. It has helped to develop 11 new kidney disease centers—10 new artificial kidney centers, including two pilot home artificial kidney programs, and a community kidney disease prevention center. In addition, an extremely promising method of artificial kidney therapy is being further developed and tested. Medically suitable patients suffering from terminal kidney disease are being trained in the use of artificial kidney systems within the setting of their own homes.

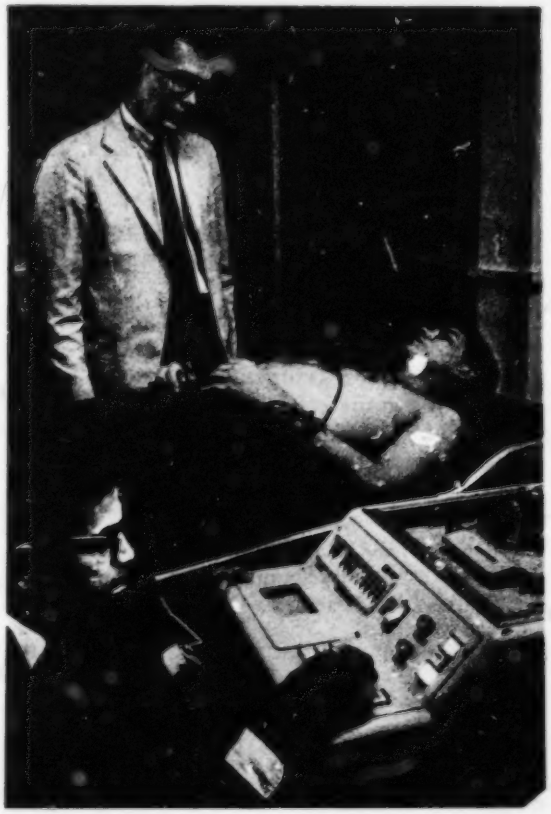
Another major aim of the center's kidney disease control effort is to reach an estimated 3.3 million Americans who have unrecognized and undiagnosed kidney infections. The center is seeking detection methods that can be applied to large groups.

More than 16 million persons in this country are affected by neurological and sensory diseases, ranging from speech and vision defects to disorders that cause crippling and premature death. This latter group includes epilepsy, cerebral palsy, multiple sclerosis, and Parkinson's disease. The highly sophisticated services necessary to prevent progression of neurological diseases are available to only a small part of our population. Only 15 percent of all Americans live in communities with adequate comprehensive programs of medical and allied services, which can detect and adequately treat epilepsy. For other neurological diseases, only 5 percent of our population has access to these services. The neurological section of the center's neurological and sensory disease control program works to improve detection and disease-halting methods and techniques and to develop better means of broadening their availability. The program supports training programs for medical and allied personnel, applied research efforts, informational activities, and investigative demonstration projects.

The sensory diseases fall into two main categories—visual and communicative. About 1.3 million persons suffer from glaucoma and 1.8 million from amblyopia ex anopsia. There are 400,000 blind persons in this country. About 6.5 million suffer from hearing disorders and a million from speech disorders. In both of these areas, there are critical shortages of adequate facilities and personnel to mount wide prevention and early detection programs to halt the progression of these diseases. Early detection is especially important in visual disorders. As with the neurological diseases, the center's program for sensory disease control directs and supports training projects, applied research efforts, informational activities, and investigative demonstration projects.

Common to nearly all the center's specific disease control programs is a group of broad disease prevention activities. These activities are housed

Recording electrocardiograms for processing by computer



Deaf students are learning the technique of cytotechnology

in three separate "prevention measures programs"—the nutrition programs, the National Clearinghouse for Smoking and Health, and the health protection systems development program.

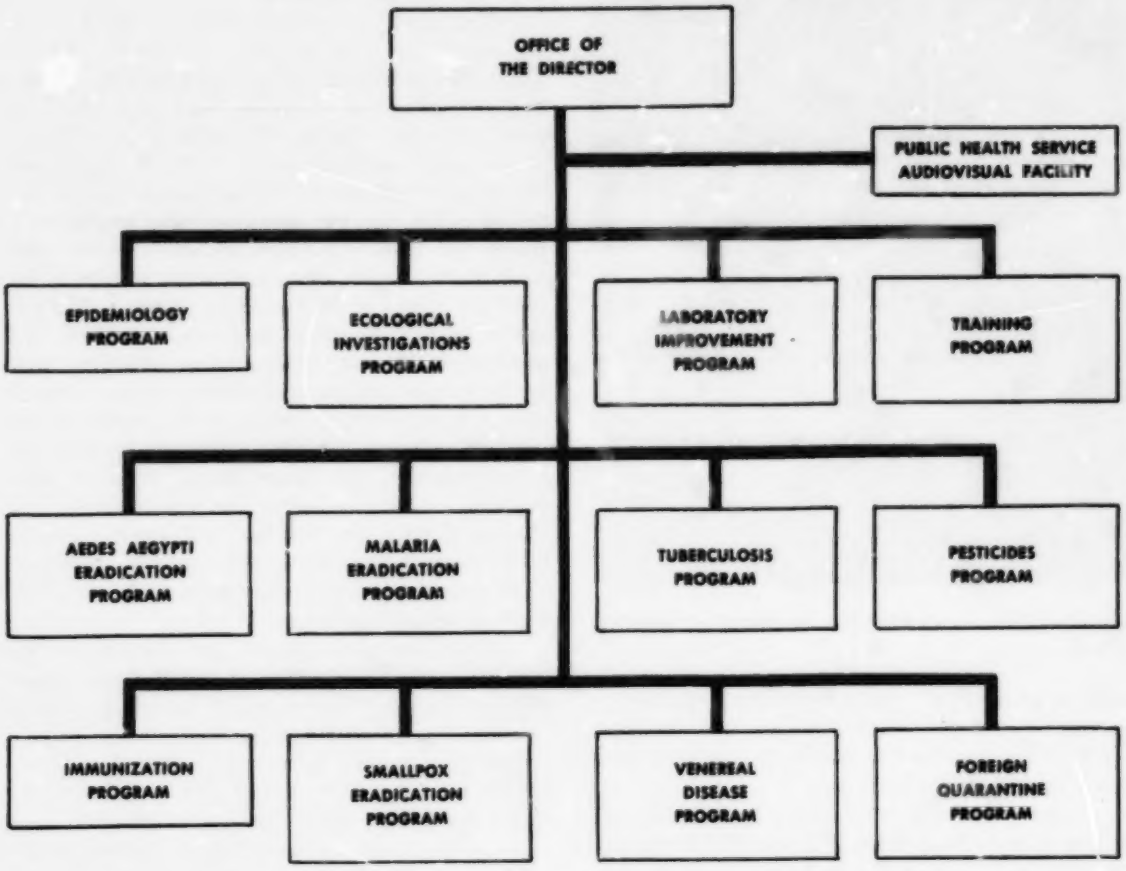
The major nutritional diseases which once afflicted many Americans—rickets, ariboflavinosis, pellagra, and others—have been virtually eradicated from this country for more than 25 years. The science of nutrition is now becoming increasingly valuable for its ability to add to the effectiveness of many disease prevention activities. Atherosclerosis, diabetes, and arthritis are but a few of the major diseases in which nutrition can be a factor in either prevention or treatment or both. The center's nutrition program, still in its infant stage, seeks to translate as rapidly as possible the new findings of nutrition research into information and practices which can be used by the specific disease control programs. The program conducts surveys and stimulates research to gather data on a variety of nutritional subjects ranging from the nutritional condition of the population to changes in nutritional requirements caused by factors such as aging, cold, heat, and other physical conditions. Another objective of the program is to increase public understanding of what constitutes proper nutrition.

Through the National Clearinghouse for Smoking and Health, the National Center for Chronic Disease Control conducts a research and educational program aimed at reducing death and disability associated with smoking. Cigarette smoking is associated with approximately 300,000 premature deaths and millions of cases of chronic disease annually. The clearinghouse works with newspapers, magazines, television, radio, and other media, and with school, health, civic, and youth groups to inform the public of the hazards of smoking. In addition, it both conducts and supports social and psychological research into smoking behavior. Scientific information on smoking and smoking-related disease is collected and distributed to physicians and research scientists. Under a community development program, the clearinghouse supports antismoking projects in States and communities. At the end of 1966, over 100 local interagency councils on smoking and health, as well as health, education, civic, youth and medical societies, and agencies were conducting local programs.

The clearinghouse represents the Public Health Service in the membership of the National Interagency Council on Smoking and Health, providing assistance in the production and distribution of materials sponsored by the Council. Aided by grant funds, two special "community laboratories"—in San Diego, Calif., and in Syracuse, N.Y.—will carry out 5-year countywide educational programs to test methods by which organized community action can change cigarette smoking habits. The clearinghouse also awards grants to universities, hospitals, research institutions, and other agencies for research into the behavioral, psychological, and social aspects of smoking.

Finally, the center's health protection systems development program stimulates and assists in planning, field testing, surveillance, and evaluation of health protection systems as they relate to prevention and control of chronic diseases. These activities include epidemiological and behavioral studies to measure the nature and scope of the problem and to determine methods and systems for providing health services directed toward positive health programs. The program carries out liaison activities with programs and agencies both within and outside the Public Health Service.

NATIONAL COMMUNICABLE DISEASE CENTER



National Communicable Disease Center

The National Communicable Disease Center, with headquarters in Atlanta, Ga., is the Public Health Service's agency for control of infectious diseases and certain other preventable diseases. This center supplements and supports the activities of State departments of health by providing specialized services that these agencies are unable to maintain on an everyday basis, and by helping them to develop increasingly effective programs for preventing, detecting, diagnosing, and controlling infectious diseases. These services include helping to quell disease outbreaks, developing practical ways to diagnose and control diseases, preparing training materials, providing consultation and demonstrations of effective ways of appraising and coping with disease problems and furnishing laboratory diagnosis in difficult situations.

The center maintains mobile teams of epidemic specialists or "disease detectives," who are ready to aid State departments of health in emergencies. They can be on the scene of a disease outbreak within 24 hours following a request for help. The specialists cooperate with local and State health officials in identifying the disease, locating its sources, and instituting control measures. In a typical year, there are 100 calls for epidemic aid. The center's epidemiology program also is responsible for compiling a weekly morbidity and mortality report from data received from the States. This weekly report which is mailed immediately to health officers throughout the country presents and interprets detailed statistics and describes disease problems of particular interest. It also gives information on disease outbreaks in foreign countries as reported by such agencies as the World Health Organization and the center's foreign quarantine program.

The laboratories at the National Communicable Disease Center:

(1) provide diagnostic services in testing specimens referred by health departments and other agencies,

(2) produce diagnostic materials,

(3) distribute diagnostic reagents not otherwise available to smaller laboratories,

Collecting mosquito larvae in Nigeria

(4) evaluate commercial laboratory products,

(5) offer a continuous program of improvement through the laboratory consultation and development program, and

(6) develop methodology for the use of new vaccines and drugs.

Major disease control programs at the center are aimed at the eradication of syphilis, malaria, and smallpox and the control of other venereal diseases and tuberculosis. Emphasis is given to immunization against diphtheria, whooping cough, tetanus, polio, and measles and the eradication of the *Aedes aegypti* mosquito, vector of yellow fever and dengue. Concentrated action is taken against other communicable diseases as problems arise and as research provides tools for eradication or control. Research, training, consultation and direct assistance are integral parts of this center's programs.

Tuberculosis, once a leading cause of death in the United States, is still a serious public health problem, with about 50,000 new cases occurring each year. The center is engaged in an effort to drastically reduce tuberculosis in this country within 10 years. The program provides grants to the States for certain activities to reduce the amount of active disease, to prevent infected individuals from developing disease, and to prevent healthy persons who live in proximity to the disease from becoming infected. Specialists from the center are assigned to State and local health departments or to project areas to work in clinical programs for chest diseases and in epidemiology, management, and other phases of tuberculosis control. Another important feature is the program to improve and expand skills of physicians, nurses, and management personnel who work in tuberculosis. The center also conducts tuberculosis research to improve diagnostic, treatment, and preventive measures that are essential in controlling the disease, including the identification of individuals and groups at high risk of developing tuberculosis, and the application of preventive measures to prevent the spread of infection.

More than 23,000 cases of primary and secondary syphilis were reported in 1965, an increase of 2.3 percent over the previous year. Forty-five percent of the early, infectious cases were in persons under 25 years of age and 17 percent in persons under age 20. To curb this and other venereal diseases the center works with State and local health agencies in planning, developing, and conducting control programs whose ultimate national objective is eradication of syphilis and a substantial reduction of other venereal diseases.

Toward this end the National Communicable Disease Center provides specialist personnel, diagnostic assistance and program evaluation to local and State departments of health, who use this aid in combination with Federal and State funds and their own personnel. Major parts in this program are investigations to identify infected persons, diagnosis and treatment, VD education to increase public awareness of the problem, and promotion of private physician reporting of cases.

For many years there have been vaccines to protect against diphtheria, whooping cough, tetanus, and polio. Yet a 1962 survey revealed that 6 out of 10 children under 5 years old—the group most susceptible to these illnesses—were not adequately protected against them. Under the Vaccination Assistance Act of 1962, the center provides funds and personnel to help State and local departments of health buy vaccines and persuade the public to accept these protective measures. With the help of this program nearly 8 out of 10 of the Nation's preschool children have been immunized against these diseases. The most noteworthy example of effectiveness is the fact that polio cases have been reduced from more than 13,000 cases in 1955 to 61 cases in 1965. Measles vaccine was added to the immunization program in 1965. The goal of the immunization program is to eradicate measles and polio and to greatly reduce incidence of other diseases for which there are effective immunizing agents.

Still another activity at the center is seeking to eradicate the *Aedes aegypti* mosquito, the carrier of urban yellow fever and dengue. Although these diseases are not now occurring in the United States, they are potential dangers wherever the mosquito is found. The eradication program is part of an international effort in which the United States has joined the nations of the Pan American Health Organization to eliminate *Aedes aegypti* from the Western Hemisphere. The program affects at least 11 States known to have light to heavy infestations of *Aedes aegypti*. Major program emphasis is now being directed against infestations in Florida, Texas,

Quarantine Officers at Kennedy Airport

Inoculating eggs to grow influenza virus

South Carolina, Puerto Rico, and the U.S. Virgin Islands.

This program is carried out under contracts between the Public Health Service and the State departments of health concerned. The center provides funds and assigns personnel in technical support, while the State provides general administrative support. Eradication work, which involves inspections for mosquito breeding sources, removal of breeding sources, and application of insecticide is usually done by State employees.

In addition to providing protection for this country against *aegypti*-borne disease, the elimination of this species of mosquito will end a continuing hazard to other countries of the Western Hemisphere where eradication has been completed.

Research grants administered through the center are provided for field evaluations of vaccine effectiveness; for investigations concerned with the spread of hospital infections into the community and on developing control methods; for standardizing certain laboratory tests; for long-term and large-scale evaluation of drug effectiveness and differential diagnostic tests; and for other areas of development or application of disease control methods.

The center also provides training and orientation for State and local public health workers in diagnosis, prevention, control and eradication of communicable diseases, consultation services, education in disaster and civil defense, and reference identification of vectors of communicable disease. Training is also offered to personnel of other Federal agencies, the armed services, and foreign students. The scope of this program is indicated by the fact that in 1966 more than 23,000 persons received this training.

The foreign quarantine program of the center conducts activities aimed at protecting the United States from the introduction of diseases from abroad. Constant vigilance is required. The expansion of world travel and the speed with which travel is now possible have intensified quarantine problems. Of the thousands of American citizens and foreign visitors entering this country each day, about one in

every five comes from a country where quarantinable diseases exist. Most of these people reach this country within a few hours or, at the most, a few days, after leaving foreign shores.

The foreign quarantine program conducts inspections and vaccinations covering persons, animals, conveyances, and certain imports entering the United States. Medical examinations of aliens about to enter this country are conducted at 36 locations abroad. At 414 U.S. ports of entry, the program conducts its quarantine inspections for smallpox, cholera, plague, louse-borne typhus, louse-borne relapsing fever, and yellow fever. Vessels and aircraft arriving from foreign ports are inspected for rodent, insect or other vermin infestation, contaminated food or water, and other unsanitary conditions which may require measures for controlling the spread of communicable disease.

Also in the field of international health, this center provides training, technical support, and personnel for programs sponsored by the Agency for International Development, the World Health Organization, and other international agencies. The center cooperates with other Federal and private agencies to control or eradicate communicable diseases in the world.

Training programs at the center attracted 277 international trainees from 78 countries in 1966, and 120 staff members traveled to 65 foreign countries.

The center administers two other separate eradication programs of international importance in addition to the *Aedes aegypti* eradication program which was discussed above.

The center administers the Public Health Service international program of malaria eradication in 17 nations in the Americas, Asia, and Africa. Jointly planned and developed with the World Health Organization, the U.S. Agency for International Development missions and the national ministries of health of cooperating countries, the program includes such activities as vector control, field investigations and testing of methods and procedures, evaluation of country programs, and training and epidemiological appraisals.

In support of the World Health Organization's goal of worldwide eradication of smallpox in the next 10 years, the Public Health Service, through the National Communicable Disease Center in Atlanta, is directing a smallpox eradication/measles control project in 19 West African nations. Financing is by the Agency for International Development. An estimated 150 million vaccinations will be performed during the 5-year course of the West African project. At the same time, an estimated 30 million children will be vaccinated against measles. However, because measles appears to be considerably more communicable than smallpox, the goal here will be control rather than eradication.

Under legislation which provides that money from the sale of U.S. food commodities to a foreign nation be spent within that nation, the center uses such funds for health studies and projects in Brazil, Ceylon, India, Poland, Israel, and Yugoslavia.

Several WHO International and Regional Laboratory Reference Centers are headquartered at the center. Among these are centers for shigella, salmonella, escherichia, staphlococcus phage typing, enteric phage typing, influenza, viral respiratory diseases, and arboviruses.

The Public Health Service Audiovisual Facility is operated by the center, and consists of a broad program of production, acquisition and distribution of medical and technical educational films and other audiovisual materials. The center's film library contains over 15,000 prints which are seen by an estimated 3½ million people each year, both in the United States and abroad.

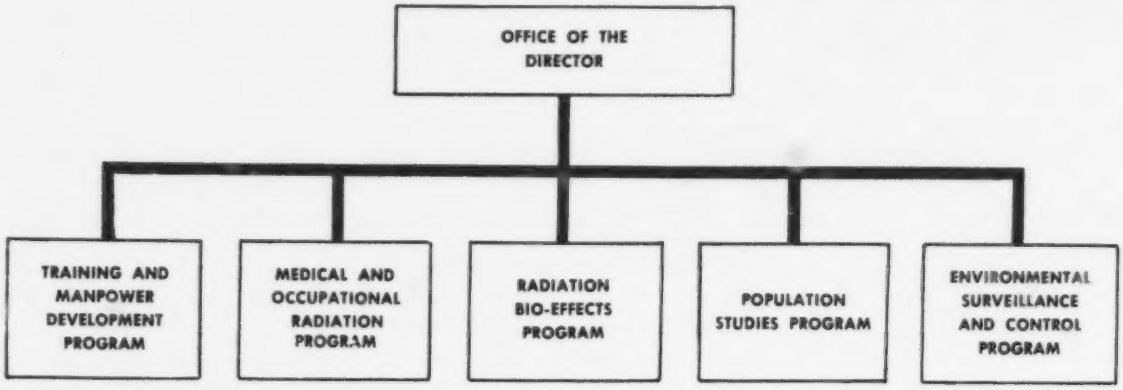
Another program of this center is the pesticides program which plans and directs a national activity for detecting, assessing, and controlling pesticides potentially harmful to public health. The pesticides program is closely related to the vector control activities of the center.

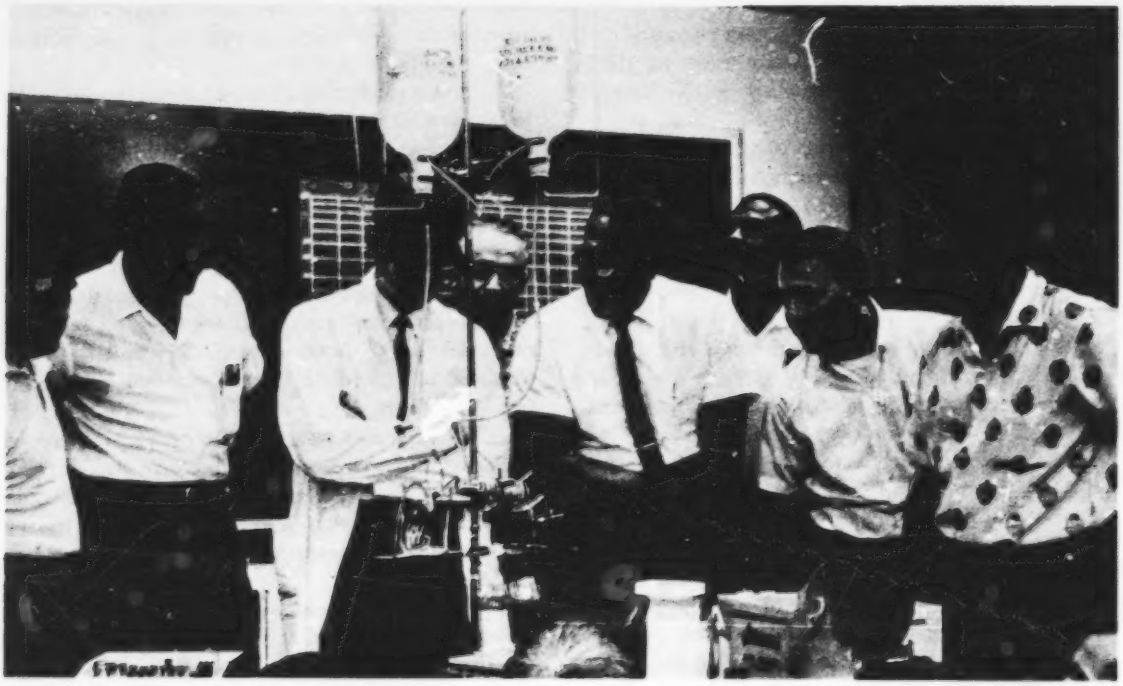
Through community study projects located in 12 States the program conducts biochemical, epidemiological, and ecological research on levels of pesticides in the human population and the environment and correlates these data with community health problems.

The pesticides program also develops improved analytical methods for measuring quantities of pesticides in air, on surfaces, and in biological materials, and works closely with other Federal agencies having responsibilities for protecting the public against pesticide hazards.

To supplement and reinforce its various disease prevention and control activities, the center conducts a varied program of public information and health education.

NATIONAL CENTER FOR RADIOLOGICAL HEALTH


OFFICE OF THE DIRECTOR
TRAINING AND MANPOWER DEVELOPMENT PROGRAM
MEDICAL AND OCCUPATIONAL RADIATION PROGRAM
RADIATION BIO-EFFECTS PROGRAM
POPULATION STUDIES PROGRAM
ENVIRONMENTAL SURVEILLANCE AND CONTROL PROGRAM



National Center for Radiological Health

The National Center for Radiological Health has as its mission the measurement of radiation in the environment, estimating human exposure, research on the effects of such exposure and leading a nationwide program to protect the public from radiation hazards.

Since the discovery of x-rays and radium, and particularly since the coming of the nuclear age, radiation has been recognized as an extremely hazardous threat to health. The short-term effects of heavy radiation exposure, depending on the dose and the parts of the body exposed, can include nausea, fatigue, blood and intestinal disorders, a temporary loss of hair, and at very high doses, serious injury to the central nervous system. Among the long-term effects observed is a higher than normal incidence of cancer and cataract formation among certain population groups. An increased number of lung cancers have occurred in men who worked over long periods at mining uranium and pitchblende, a source of radium. Bone cancer developed in luminous watch-dial painters, who unknowingly, day by day, swallowed small quantities of radium. Skin cancer in physicians and dentists has resulted from repeated overexposure to radiation. An increased incidence of leukemia has been observed among many physicians who practice radiology in this country and among the survivors of the atomic bombings of Hiroshima and Nagasaki. Animal studies have shown that radiation can shorten the lifespan.

The most insidious effect involves the ability of radiation to damage the genes—the biological blueprints which determine the inherited characteristics of the cell. The damage can result in offspring having minor defects which are not readily detectable but which may result in diminished vigor, or the damage may be more serious, causing major health impairment or even death in the child.

The sources of radiation in our environment have multiplied rapidly in recent years. There are more than 200,000 medical and dental diagnostic x-ray machines in hospitals, clinics, and the offices of physicians and dentists throughout the country. Each year, more than half the population is exposed either to x-rays or several radioactive materials during diagnosis and treatment of disease. Some 2,000 hospitals and other medical organizations are now using radioisotopes, and an estimated 500,000 patients annually are given radioisotope tracers for diagnosis of various conditions affecting virtually every organ of the body. The average genetically significant dose for medical x-ray exposure in 1964 was 55 millirads, about half of the natural radiation background.

The burgeoning nuclear power industry presents another growing source of potential radiation exposure. More than 200 nuclear reactors are in operation throughout the country with many others under construction or in the planning stage. The Atomic Energy Commission estimates that by the end of the century the Nation will be generating 10 times as much electrical energy as at present, with at least one-half being produced by nuclear plants. Other potential radiation sources include waste from nuclear propulsion units in space vehicles, underground nuclear detonations for economic benefits, and fallout from nuclear weapons testing.

There is a grave reason for insuring that radiation exposure in the environment is kept at the lowest levels possible. It is believed that some genetic damage occurs from natural background radiation and that efforts should be made to keep the man-made genetic exposure less than this natural radiation exposure.

The programs of the National Center for Radiological Health involve surveillance of radiation levels in the environment and in the population, research to determine the effects of radiation and to establish limits for sources of radiation exposure, developing equipment and techniques which minimize radiation exposure, and training public health radiation specialists. This center's administrative offices and laboratories are located in Rockville, Md., near Washington, D.C., with other laboratories at Montgomery, Ala.; Las Vegas, Nev.; Winchester, Mass.; Cincinnati, Ohio; Honolulu, Hawaii; and through contractual arrangements, at Fort Collins, Colo. and Corvallis, Oreg.

A constant watch on the radiation level in the Nation's environment is maintained by the center through five surveillance systems. Daily 24-hour air samples are collected from 74 stations through-

out the country. Through a Pasteurized Milk Monitoring Network, operated in cooperation with State and local government agencies, concentrations of radioactive materials can be sampled from milk sources in every State. Measurements for radioactivity are included in the Public Health Service's monitoring of drinking water supplies of more than 800 cities. The center conducts an institutional diet sampling program, which develops estimates of the total dietary intake of radionuclides of children and teenagers in nearly every State. Supplementing these activities is a bovine thyroid sampling program, with stations in 20 slaughterhouses in 16 States. This sampling is very sensitive to the presence of radioiodine at very low concentrations in the environment.

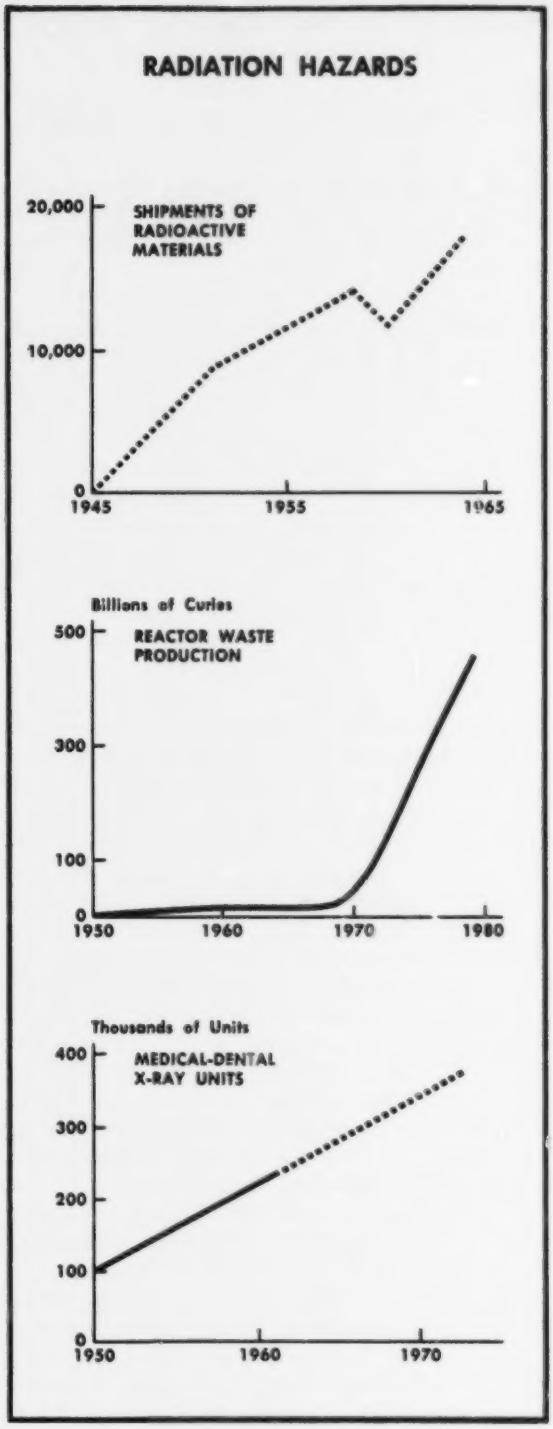
Results of the surveillance activities are published and distributed regularly to public health officials and agencies and to the public directly and via the press.

The center conducts studies of the radiation levels absorbed by various segments of the population and of the effects of this radiation. The incidence of leukemia, bone disorders, neoplasia, and other diseases is noted in persons exposed to X-rays and other radiation and compared to the incidence suffered by those in "control" groups. Animal studies are conducted to learn more about the effects of chronic low-level radiation and the higher levels of exposure which cause damage that is immediately apparent.

To prevent unnecessary exposure to radiation, the center conducts programs to insure the safety of X-ray and other radiation producing equipment. A study in 1956 revealed that only 25,000 of the Nation's 100,000 dental X-ray machines met recommended safety standards. The center has developed a film pack kit which it has mailed to the Nation's dentists for testing their X-ray machines. Dentists return exposed film to the center for analysis, and receive recommendations for correcting defects. More than 75,000 machines now meet recommended safety standards.

The center assists States in planning and carrying out their own radiation health program by developing model laws and regulations and providing advice, laboratory assistance, and other technical help on special problems.

The expanding radiological health field requires greater manpower each year. In 1958, the



Surveying environmental radiation levels

National Advisory Committee on Radiation estimated that 1,200 radiological health specialists and 4,000 supporting radiation technicians will be needed in this country by 1970. To help meet this need, grant funds are available to universities and colleges for training radiation health personnel. In 1966, 40 universities and junior colleges were involved in specialist training. During the same year, 60 American universities, medical schools, hospitals connected with medical schools, and research foundations connected with universities received research project grants from the center for studies in radiological health. Four foreign universities also received research project grants.

The center also conducts its own short-term courses in radiological health subjects for graduate-level professional employees in government and industry—engineers, industrial hygienists, physicians, dentists, pharmacists, chemists, physicists, nurses, and public health administrators. During the 1959–66 period, 450 professionals attended the short-term courses. From 1961 through 1966, 705 radiological health specialists received support through the center's training activities.

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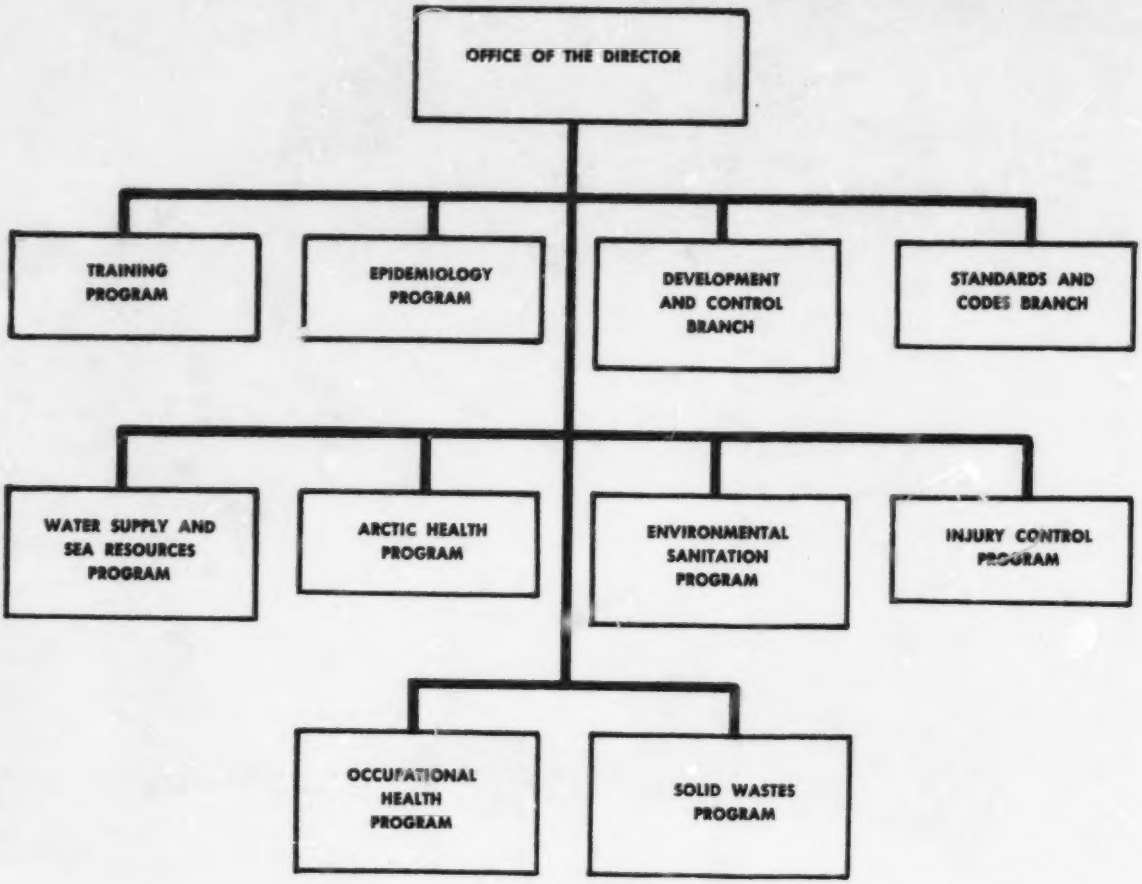
NATIONAL CENTER FOR URBAN AND INDUSTRIAL HEALTH



National Center for Urban and Industrial Health

Public health has always been virtually synonymous with urban health. The epidemic connected with the infamous Broad Street pump in London was an urban health problem, and so were the epidemics that ravaged Europe and the Western Hemisphere during much of the last 300 years. Today the science of public health has ranged far beyond the sphere of communicable disease control into such areas as mental hygiene, health care for the aged, and research into the innermost mysteries of the living cell. But the public health effort has never lost its ties to the problems of people in cities.

For many years, the Public Health Service has conducted a variety of programs concerned with urban sanitation, food and water supplies, injury and occupational health hazards, and other problems affecting the health of people in an urban industrial environment. These programs have now been consolidated in the National Center for Urban and Industrial Health, whose mission is to provide better understanding and control of the conditions of urban and industrial living that jeopardize human health and safety.

Moreso today than at any earlier time, the public health worker is aware that people jammed together in urban areas are threatened by complex health hazards against which the defenses are often inadequate. Contemporary urban crowding intensifies public health hazards that have existed for as long as people have congregated in cities and towns. Efforts to provide safe drinking water and food supplies, adequate sanitation, and control of the sources and carriers of communicable disease have expanded of necessity over the years and have become vastly more important simply because so many more people depend on them.

The U.S. population will soon pass the 200 million mark. Seven out of every 10 Americans now live in cities, and by the year 2000 the urban population will be 80 percent of nearly 324 million people. This growth of urban population will continue to magnify old public health problems and to add perplexing new ones, such as those associated with urban stress. But the rising impact of technological innovation on urban living will be of perhaps even greater health significance. The effects of technological change on personal health and the health of whole communities is poorly understood, and is cause for serious concern. Even fragmentary knowledge leaves no room for doubt that human health and safety are threatened by the influx of new chemicals, new sources and applications of energy, new sources of noise, and new requirements for services and facilities geared to the material demands of a soaring population.

These are the kinds of problems which the National Center for Urban and Industrial Health must help identify, understand, and solve. The roots of its programs are as old as the science and practice of public health. The challenge, however, is as new as tomorrow.

In carrying out its responsibilities, the center conducts research, demonstration and pilot operations in its facilities and through grants and contracts. It conducts surveillance activities and technical training, renders technical assistance to governmental and other organizations, and develops standards and codes for alleviating health problems.

There are six major programs within this center, each concerned with a different aspect of the environmental health problems confronting American families.

The environmental sanitation program is concerned with such aspects of modern living as the home, crowded housing, swimming pools, schools and other institutions, recreational places, and travel accomodations. It is also concerned with protecting the public from foodborne illnesses, such as salmonellosis and botulism, that accompany poor sanitation. The program cooperates with the States to promote high quality milk inspection throughout the country by certifying laboratories that inspect milk shipped across State lines. The purity of the Nation's milk and milk products is extremely important because milk is capable of transmitting a number of serious diseases, including tuberculosis, typhoid fever, scarlet fever, diphtheria, septic sore throat, Q-fever, undulant fever, and food poisoning. The effectiveness of the milk inspection program can be seen from the few milk-related disease outbreaks that have been reported during the past

decade, while as many as 50 outbreaks occurred annually in the years before.

To protect the health of some 2 million Americans traveling across State lines each day, the program maintains certification, research, and training activities concerning sanitary control and the safety of drinking water and food served on interstate carriers such as trains, ships, commercial aircraft, and buses.

The center's occupational health program deals with the health hazards of modern industry. In providing unmatched prosperity, industry is also producing new hazards to the worker's health via dangerous substances and machinery. There is evidence that many chronic diseases—cancer, respiratory ailments, allergies, and heart disease, to name a few—often have a direct relationship to the victim's occupation. At least 4 million workers are employed at processes either immediately dangerous to their health or in need of continual inspection. More than 7 million people work under conditions where noise levels are high enough to damage hearing.

While most large modern industrial plants give careful attention to protecting their workers from health hazards, the situation is quite different in small plants, where most workers are employed. Only one out of five workers is employed where there are physicians or nurses to provide preventive and emergency health services.

The occupational health program ascertains the health status of the American labor force and the impact of the work environment on employee health, develops better detection and control methods for occupational diseases, and assists community and industrial efforts to provide occupational health services. Currently, the program is studying the effects of industrial dusts, chemicals, heat, cold, noise, and vibration. Occupational dermatitis and respiratory diseases also are being studied. The program cooperates with professional organizations to develop and recommend criteria for safe exposure to industrial materials and procedures for improving the work environment. It also operates the center's Appalachian Laboratory for Occupational Respiratory Diseases in Morgantown, W. Va.

The solid wastes program promotes disposal of solid wastes in ways that protect the health and welfare of the public. Each day, our Nation generates more than 800 million pounds of solid wastes—garbage and household trash, industrial and agricultural wastes, and abandoned cars. That amounts to nearly five pounds of solid waste per person that must be disposed of somehow. As our population increases, the problem will become far more critical.

The solid wastes program is seeking to improve existing methods for solid waste collection, handling, and disposal and to develop better ones. Major emphasis is placed on new opportunities to salvage and re-use wastes in ways that are free of health hazards. Research conducted by the program includes studies on such disposal techniques as incineration, sanitary land fill, and composting. The public health aspects of waste disposal are being studied, as is the biodegradation of wastes. Other studies concern air and water pollution aspects of waste disposal practices.

This program uses research, training and planning grants, and demonstration projects to encourage action by both public and nonprofit private agencies and organizations in the development and use of improved methods for solid waste collection, handling, and disposal. In pilot plants, for example, recovery of valuable materials and production of power by burning solid wastes without producing air pollutants are being investigated.

The water supply and sea resources program is concerned with public health and medical aspects of the use of fresh and salt water. More specifically, it attempts to insure that drinking water supplies do not contain harmful organisms or chemical substances. The program is concerned also with the safety of recreational waters.

National health standards, including the Public Health Service drinking water standards, are developed under this program, which also certifies water supplies used by the many millions of people who annually travel by planes, trains and other interstate carriers. Through international organizations, the program participates in the development of water supply programs for other nations.

Oysters, clams, and mussels can concentrate organisms and chemical substances harmful to human health. Hence the program's concern with the 9 million acres of shellfish growing areas in this country. The major tool for insuring the safety of shellfish is a cooperative Federal, State and industry program. States make sanitary and bacteriologi-

cal surveys and prohibit harvesting shellfish from nonapproved areas. State inspectors also check individual shellfish shippers. This program evaluates each State shellfish sanitation program each year. If the State program is effective, the Public Health Service endorses it.

This program conducts research on shellfish sanitation problems in the national center's laboratories at Narragansett, R.I.; Dauphin Island, Ala.; and Gig Harbor, Wash.

The center's injury control program seeks to reduce the number of accidents on the highway, around the home, and in public places which kill more than 100,000 people and injure 50 million in the United States each year. Accidental injuries rank fourth as the cause of death in this country, following heart disease, cancer, and stroke. Accidents are the first cause of death up to the age of 35. The economic loss from accidents is more than $16 billion a year.

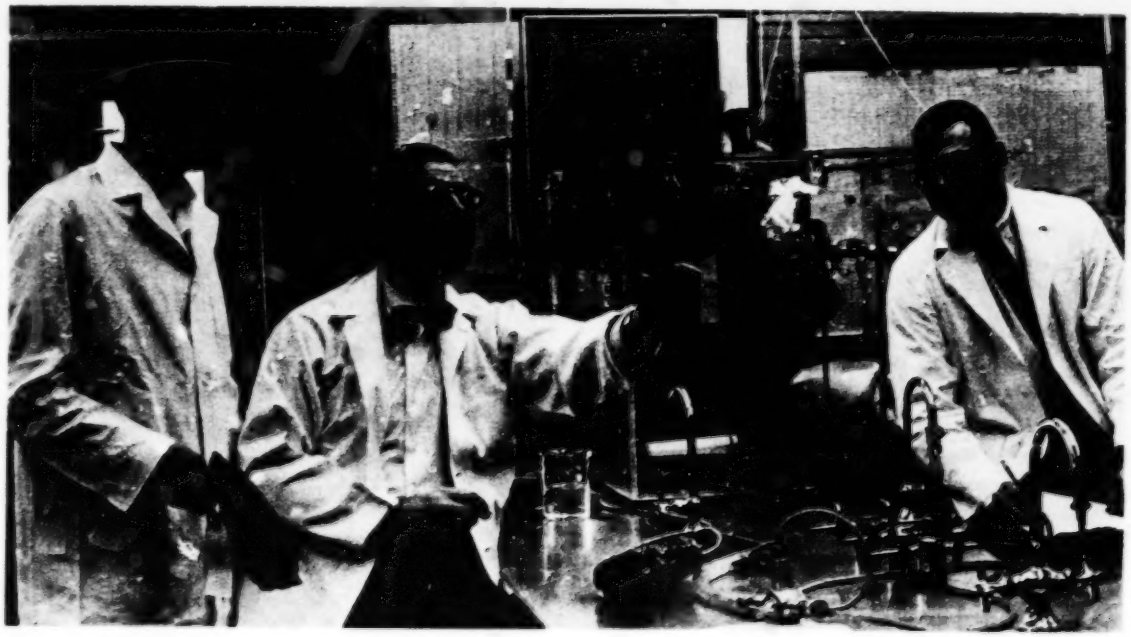
This program seeks to determine the cause of accidental injuries, to find means for preventing them or reducing their severity, and to educate the public in avoiding accidents.

About 75 percent of the research grant funds in the program have been directed at traffic safety. This research has yielded important information about the value of automobile safety devices that reduce injury in a collision: collapsible steering wheels, improved door locks, padded dashes, seat belts, and improved safety glass, among others. These and other safety features are now rapidly becoming standard equipment on new automobiles.

The injury control program also operates the national center's laboratory in Providence, R.I., where scientists use driving simulators to study the effects on driving behavior of such factors as aging, fatigue, sleepiness, drugs, alcohol, and physical and mental disabilities.

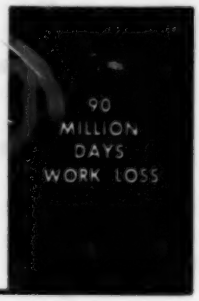
An important goal of the program is to encourage private industry to reduce the potential hazards of its products. These products include power equipment used around the home, such as rotary-blade lawnmowers that will not injure or kill; glass doors that will not cut if broken; plastic bags that will not cause a child to suffocate; safer farm machinery; and clothing and other fabrics that won't catch fire. Other injury control activities are aimed at reducing falls, burns, accidental poisoning, recreational injuries and deaths, and farm accidents.

Doctors study tissue section of dead miner



YEARLY ACCIDENT TOLL

104 THOUSAND KILLED
52 MILLION INJURED
16 BILLION—ANNUAL COST



The arctic health program deals with the extreme climatic conditions of the Nation's arctic and subarctic regions which present special health problems to people living there. This program is concerned with alleviation of those problems, which include environmental hazards, communicable and nutritional diseases, and metabolic disorders. The program operates the national center's Arctic Health Research Facility in Fairbanks, Alaska.

These six major programs of the National Center for Urban and Industrial Health are aided by four staff groups specializing in areas used by programs in accomplishing their missions. A training program offers intensive training to professional people practicing in the fields of urban and industrial health to increase their capabilities; to inform them of recent research developments; and to inform civic and political leaders about urban and industrial health problems and what can be done about them. The program also awards training grants to institutions and assists State and community agencies in carrying on training activities. The epidemiology program conducts statistical investigations on specific effects of modern living and urbanization on the health of Americans. It provides statistical services for the center, and assists the programs with data collection and with disease and environmental surveillance activities.

A development and control branch coordinates the center's activities in technical assistance, environmental controls, and relations with Federal, State, and local agencies. It directs demonstrations of environmental control techniques that involve more than one of the center's programs, and represents the center in grants under the Partnership in Health Act. The program also coordinates the center's relationships to regional actitvities and conducts programs dealing with integrated planning for urban and industrial complexes.

A standards and codes branch serves as the center's focal point for the promulgation of standards and codes for the control of health hazards in the urban and industrial environment. To do this, it stimulates investigations, surveillance and research needed to substantiate codes and standards and to show methods by which those standards and codes can best be applied by local governments.

An urban planning branch conducts a program for converting health information into the development of the physical environment of the Nation's urban areas. The branch conducts research and develops standards, guidelines, model codes and ordinances, and technical manuals designed to put health information into practice in the urban environment. The branch assists State and local agencies and community leaders in policy development, planning, and plan implementation for urban environmental health. It also acts for the center in coordinating comprehensive urban health efforts with professional health associations and with other Federal programs and agencies.

In overseeing the operations of these programs, the Director of the National Center for Urban and Industrial Health is assisted by Offices of Program Planning and Evaluation, Research and Development, Grants Administration, Administrative Management, and Information.

Taking measurements at experimental arctic reservoir

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